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भाग 1 धातु के बने शैन्क

Indian Standard

DENTAL ROTARY INSTRUMENTS — SHANKS

PART 1 SHANKS MADE OF METALS

ICS 11.060.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 2003 Price Group 4

Dentistry Sectional Committee, MHD 8

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 1797-1:1992 'Dental rotary instruments — Shanks — Part 1 : Shanks made of metals' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Dentistry Sectional Committee and approval of the Medical Equipment and Hospital Planning Division Council.

This standard is one of the series of basic standards on dental rotary instruments and constitutes an important link between the standards on dental rotary instruments and those on dental hand-pieces.

This standard under general title 'Dental rotary instruments — Shanks' is being published in two parts. Other part is as follow:

Part 2 Shanks made of plastics

The text of standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the edition indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 6507-1:1982	IS 1501 (Part 1):1984 Method for Vickers hardness test for metallic material : Part 1 HV 5 to HV 100 *(second revision)*	Technically equivalent

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of ISO 3274 : 1975 and ISO 4288 : 1985, referred in this adopted standard and has decided that these are acceptable for use in conjunction with this standard.

An Amendment 1 to ISO 1797-1:1997 has been issued in 1997, which is reproduced at the end of the text of this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

IS 15311 (Part 1) : 2003
ISO 1797-1 : 1992

Indian Standard
DENTAL ROTARY INSTRUMENTS — SHANKS
PART 1 SHANKS MADE OF METALS

1 Scope

This International Standard specifies shanks of dental rotary instruments and gives measurement methods for the verification of the dimensions. A quality control requirement is added in order to ensure a high quality level.

Part 1 of ISO 1797 specifies shanks made of metals while part 2 specifies shanks made of plastics.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1797. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 1797 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3274:1975, *Instruments for the measurement of surface roughness by the profile method — Contact (stylus) instruments of consecutive profile transformation — Contact profile meters, system M.*

ISO 4288:1985, *Rules and procedures for the measurement of surface roughness using stylus instruments.*

ISO 6507-1:1982, *Metallic materials — Hardness test — Vickers test — Part 1: HV 5 to HV 100.*

3 Classification

The shanks of dental rotary instruments are classified into the following types, according to their diameters and design:

Type 1: diameter 2,35 mm with groove and flat;

Type 2: diameter 2,35 mm cylindrical;

Type 3: diameter 1,6 mm cylindrical with conical or rounded end;

Type 4: diameter 3 mm cylindrical.

4 Symbols and terms

Symbols and terms are shown in figures 1 to 3 with the following key:

d_1	diameter of shank
d_2	diameter in the groove
s	D-flat dimension
l_1	fitting length
l_2	shoulder to end length
l_3	shoulder to groove length
l_4	width of groove

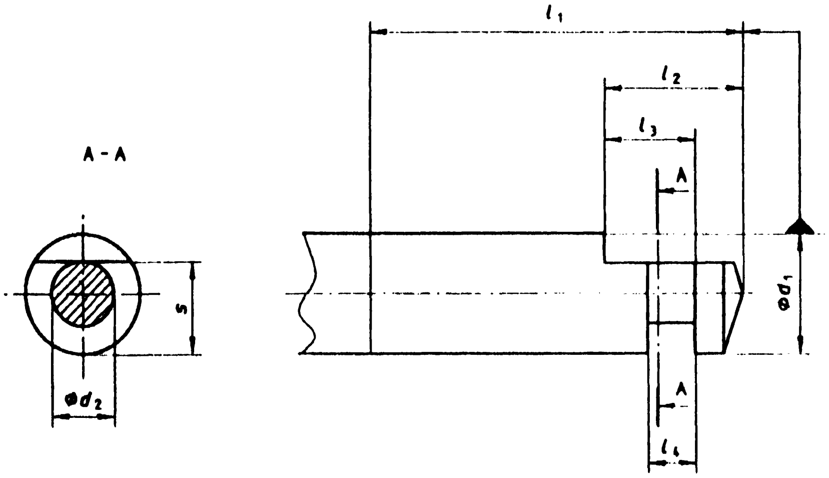


Figure 1 — Type 1 shank

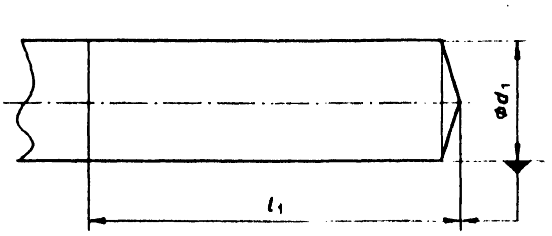


Figure 2 — Type 2 and type 4 shank

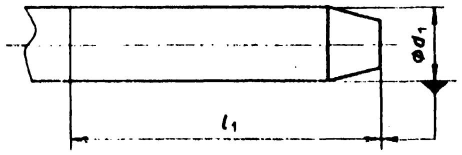


Figure 3 — Type 3 shank

5 Requirements

5.1 Material

Shanks shall be made of metal materials such as, for example steel, carbide. The type of material and the treatment given to it is at the discretion of the manufacturer.

5.2 Dimensions

The dimensions and tolerances shall be as shown in figures 4 to 7 and as given in table 1.

Dimensions are given in millimetres, surface roughness in micrometres.

The end of the shank for types 1, 2 and 4 shall be either flat, conical or rounded. The shape of the end shall be at the discretion of the manufacturer.

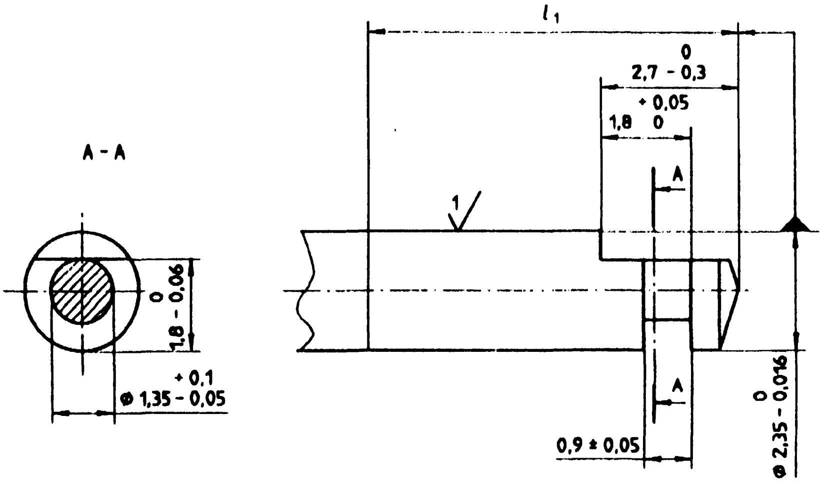


Figure 4 — Type 1 shank

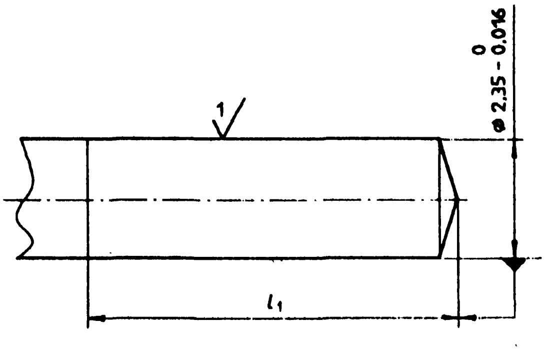
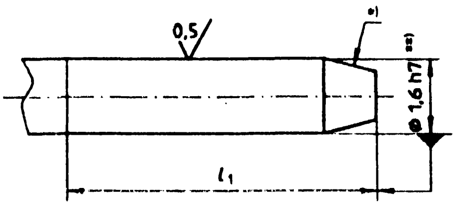


Figure 5 — Type 2 shank



*) Conical or rounded end at the discretion of the manufacturer

**) h7 = $^{0}_{-0,01}$

Figure 6 — Type 3 shank

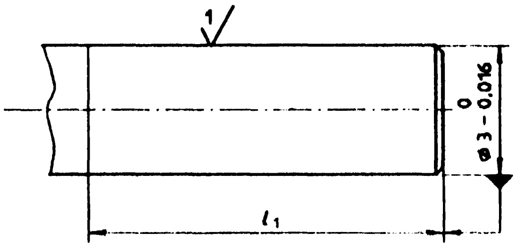


Figure 7 — Type 4 shank

Table 1 — Fitting length of shank

Diameter	l_1 min.				
	Shanks types 1 and 3 Length of instrument			Shank type 2	Shank type 4
	miniature, short	standard, long	extra long		
1,6	9	11	12		
2,35		11$^{1)}$	12$^{1)}$	15 or 30	
3					15 or 30
1) Enlargement should not occur within l_1 = 13,5 mm.					

5.3 Surface roughness

The surface roughness, as determined by the methods described in ISO 3274 and ISO 4288, shall be as specified in figures 4 to 7.

5.4 Hardness

The hardness, for shanks made from steel or tungsten carbide, as determined by the method specified in ISO 6507-1, shall be not less than 250 HV 5.

6 Sampling

The method of taking samples and the number of instruments needed for testing shall be the subject of agreement between the interested parties.

7 Test methods

7.1 Shank diameters

Measurements shall be made using either tungsten carbide ring gauges checked regularly with mating plugs, air gauges, or dial indicators, graduated in divisions of 0,001 mm.

The diameter d_1 shall be measured by traversing the length l_1.

7.2 Other dimensions

Measurements shall be made using either appropriate gauges with tungsten carbide faces, tungsten carbide-faced micrometer calipers, toolmakers' microscopes, or dial indicators.

8 Quality control

8.1 Types of shanks

For the purpose of quality control, the shanks of the instruments shall be classified as given in clause 3.

8.2 Defects

Major defects shall be those deviations from the specifications listed in table 2. Minor defects shall be all deviations in fitting dimensions not listed in table 2.

NOTES

1 Major defects include only those items which prevent an instrument from operating.

2 Minor defects include all other deviations from the specification which lower the quality of the instrument.

8.3 Acceptable quality level (AQL)

The acceptable quality level expressed in terms of the number of defects per 100 pieces, for each type of instrument, shall be as shown in table 3.

Table 2 — Major defects

Shank	d_1	d_2	l_3	l_4	s
Type 1	> 2,35	> 1,45	< 1,80	< 0,85	> 1,80
Type 2	> 2,35	—	—	—	—
Type 3	> 1,60 < 1,59	—		—	—
Type 4	> 3			—	—

Table 3 — Acceptable quality level

Shank	Major defects AQL	Minor defects AQL
Type 1	2,5	6,5
Type 2	2,5	6,5
Type 3	1,5	4,0
Type 4	2,5	6,5

Annex A
(informative)

Bibliography

[1] ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirements.*

[2] ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

AMENDMENT 1

Page 4

After subclause 5.4 add the following subclause 5.5.

5.5 Marking

Marking, if envisaged, should be outside the fitting length l_1.

If the marking is applied within the fitting length l_1, the outside diameter of the marking shall not exceed the effective diameter of the shank.

Marking shall be resistant to disinfection, cleaning and sterilization according to the manufacturer's instructions.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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